UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/751,816	12/29/2000	Francis M.L. Ng	042390.P10363	8480

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EXAMINER
ARNOLD, ADAM

ART UNIT	PAPER NUMBER
2697	9

DATE MAILED: 09/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _21 July 2003_ .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-49_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-49_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)   4)☐ Interview Summary (PTO-413) Paper No(s). _____ .

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5)☐ Notice of Informal Patent Application (PTO-152)

3)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _7_ .   6)☐ Other: .

DETAILED ACTION

The examiner acknowledges the receipt and entry of the applicant's amendment.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

2.   Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bajaj, U.S.

Patent No. 6,438,266, in view of Shum, U.S. Patent No. 6,476,805. Referring to claim 1, Bajaj

discloses a method comprising performing parameterization (col. 4, line 61) on 3D geometric

graphic data (col. 4, line 48); performing scalar quantization on the graphic data (col. 17, lines

13-24); and generating coded and compressed (col. 3, line 55) 3D geometric graphical data. Baja

does not explicitly disclose encoding the graphic data differentially. Shum discloses using

differential encoding (col. 25, line 59-65). At the time the invention was made, it would have

been obvious to a person of ordinary skill in the art to encode the 3D geometric graphic data

differentially. One of ordinary skill in the art would have been motivated to do this because

differential encoding is a standard practice within graphics image encoding schemes to further

compress a graphics image and it would be a process of replacing the generic coding of Bajaj

with the more specific (as well as conventional) coding of Shum.

Referring to claim 2, Bajaj further discloses where the 3D geometric graphic data includes normalized normal vectors (col. 11, lines 1-2).

Referring to claim 3, Bajaj further discloses mapping the normal vectors into spherical coordinates (col. 17, lines 3-12).

Referring to claim 4, Bajaj further discloses where the scalar quantization comprises generating actual quantized spherical coordinate values (col. 17, lines 12-15).

Referring to claim 5, Bajaj further discloses generating predicted quantized spherical coordinate values from an actual value (col. 18, lines 45-49) and generating error values by subtracting predicted quantized values from actual values (col. 17, lines 30-33).

Referring to claim 6, Bajaj further discloses using entropy encoding for encoding error values (col. 11, lines 30-39).

Referring to claim 7, Bajaj further discloses using MPEG4 3D (col. 14, line 31).

Referring to claim 8, the remarks presented above with respect to claim 1 apply equally to this claim.

Referring to claim 9, the remarks presented above with respect to claim 2 apply equally to this claim.

Referring to claim 10, the remarks presented above with respect to claim 3 apply equally to this claim.

Referring to claim 11, the remarks presented above with respect to claim 4 apply equally to this claim.

Referring to claim 12, the remarks presented above with respect to claim 5 apply equally to this claim.

Referring to claim 13, the remarks presented above with respect to claim 6 apply equally to this claim.

Referring to claim 14, the remarks presented above with respect to claim 7 apply equally to this claim.

Referring to claim 15, Bajaj further discloses a computer system with instructions (col. 6, lines 31-40). The remarks presented above with respect to claim 1 apply equally to the remainder of this claim.

Referring to claim 16, the remarks presented above with respect to claim 2 apply equally to this claim.

Referring to claim 17, the remarks presented above with respect to claim 3 apply equally to this claim.

Referring to claim 18, the remarks presented above with respect to claim 4 apply equally to this claim.

Referring to claim 19, the remarks presented above with respect to claim 5 apply equally to this claim.

Referring to claim 20, the remarks presented above with respect to claim 6 apply equally to this claim.

Referring to claim 21, the remarks presented above with respect to claim 7 apply equally to this claim.

Referring to claim 22, the remarks presented above with respect to claims 1, 5, 6 and 15 apply equally to this claim.

Referring to claim 23, the remarks presented above with respect to claim 2 apply equally to this claim.

Referring to claim 24, the remarks presented above with respect to claims 3 and 4 apply equally to this claim.

Referring to claim 25, the remarks presented above with respect to claim 5 apply equally to this claim.

Referring to claim 26, the remarks presented above with respect to claim 5 apply equally to this claim.

Referring to claim 27, the remarks presented above with respect to claim 6 apply equally to this claim.

Referring to claim 28, the remarks presented above with respect to claim 7 apply equally to this claim.

3.   Claims 29-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bajaj. Referring to claim 29, Bajaj discloses generating actual quantized spherical coordinate values by adding error values to predicted quantized values (col. 18, lines 62-64) and generating decompressed 3D graphics data from the coordinate values (col. 4, line 53). Bajaj does not explicitly disclose deparameterization or dequantization. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to decode by deparameterization and dequantization the encoded data. One of ordinary skill in the art would have been motivated to do this because any data that has been encoded must be decoded to be of any use. In this application, the decoding steps are simply the encoding steps in reverse.

Referring to claim 30, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 31, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 32, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 33, the remarks presented above with respect to claim 7 apply equally to this claim.

Referring to claim 34, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 35, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 36, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 37, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 38, the remarks presented above with respect to claim 7 apply equally to this claim.

Referring to claim 39, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 40, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 41, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 42, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 43, the remarks presented above with respect to claim 7 apply equally to this claim.

Referring to claim 44, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 45, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 46, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 47, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 48, the remarks presented above with respect to claim 29 apply equally to this claim.

Referring to claim 49, the remarks presented above with respect to claim 29 apply equally to this claim.

Response to Arguments

1.   Applicant's arguments filed July 21, 2003 have been fully considered but they are not persuasive. In response to applicant's argument (last paragraph of page 9) that there is no

motivation to combine the Bajaj and Shum references, the examiner disagrees. The ultimate

purpose of both inventions is to efficiently manipulate and transmit graphic images by means of

encoding (col. 2, line 30 of Shum and col. 1, line 13 of Bajaj). As pointed out above, differential

encoding is a standard procedure for further encoding. In fact, even though Bajaj does not

specifically mention "differential encoding," there is support in their patent for this procedure.

At col. 4, line 37, Bajaj states "[t]he progressive geometry encoding uses a process of encoding

vertices at the lowest level by a code difference approach."

In response to applicant's argument (page 11, line 11) that there is no suggestion for

performing scalar quantization in Baja, the examiner disagrees. The reference cited above at col.

17, lines 1-24 illustrates a scalar quantization separate from the vector quantizer. The applicant

also argues there is no support for the "scalar dequantization" limitation. This argument has

been dealt with sufficiently in the rejection to claims 29-49 above. The remainder of the

arguments deals with these same issues.

The rejections to these claims stand.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to **Adam Arnold** whose telephone number is **703-305-8413**. The

examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM

and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Joseph Mancuso, can be reached at (703) 305-3885.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,

Arlington, VA, Sixth Floor (Receptionist).

JOSEPH MANCUSO
PRIMARY EXAMINER